

233 South Wacker Drive Suite 800 Chicago, Illinois 60606

312 454 0400 www.cmap.illinois.gov

### **MEMORANDUM**

To: CMAQ Project Selection Committee

From: CMAP Staff

Date: December 5, 2013

**Re:** Review of project ranking processes and criteria used by other MPOs

As part of its FY 2014 staff work plan, CMAP is reviewing how it carries out the staff functions associated with the Congestion Mitigation and Air Quality Improvement program (CMAQ).¹ One task in this review is to benchmark CMAP's current procedures by investigating the criteria and methods the staff of other metropolitan planning organizations (MPOs) use to rank and select projects. While federal law emphasizes cost-effectiveness and projects that reduce fine particulate matter emissions, it also gives considerable latitude to metropolitan areas in their choice of criteria and ranking methods.

Our review suggests that it is quite typical for MPOs to employ a point system by which to consider a variety of criteria, qualitative and quantitative, together on the same scale. These point-based rankings are then combined with committee deliberation to produce the recommended program of projects. Shifting to a multi-criteria point system to evaluate projects should be considered for the CMAQ program at CMAP.

# Current ranking methods used by CMAP

CMAP currently uses the cost-effectiveness of volatile organic compound (VOC) removal (or fine particulate matter removal for direct emissions reduction projects) as the criterion to rank projects for the staff-recommended program. Within each project category, such as bicycle facilities, traffic flow improvements, etc., projects are ranked from highest to lowest cost-effectiveness. Staff also reports the projects' performance on other measures, including

<sup>&</sup>lt;sup>1</sup> See the FY 14 work plan under the Performance-Based Programming Core Program.

<sup>&</sup>lt;sup>2</sup> For example, an evaluation system might have a maximum of 50 points available for congestion reduction, 10 points for safety, and 40 points for project readiness. In this system, a project that improves safety a great deal would still rank lower than one that reduces congestion a relatively small amount. Other distributions of points would produce different results. Note that the points do not need to add up to 100.

reduction in trips and vehicle miles traveled (VMT), but these measures are not used to rank projects for the staff-recommended program.

Through the GO TO 2040-focused programming approach, CMAP has initiated the use of additional criteria to evaluate projects. For instance, in the FY 2014 – 18 CMAQ cycle the Regional Transportation Operations Coalition (RTOC) evaluated highway projects based on the travel time index, crash rate, and planning time index in the corridors where the project was proposed. However, these scores were only used to decide which projects to recommend to the Project Selection Committee; they were not actually used to rank projects in the staff program. The Bicycle and Pedestrian Task Force scored projects using a different set of factors, including population and employment near the facility, transit boardings near the facility, etc. Likewise, this scoring was not used to rank projects in the staff-recommended program, but was provided as guidance from the modal focus groups to the Project Selection Committee.

# **Summary of findings from other MPOs**

Our review of how competitive CMAQ processes operate in other regions suggests that many MPOs:

- Use a point system that allows multiple criteria to be evaluated on the same scale, so that the total project score is a composite of scores on the individual criteria.
- Consider project benefits beyond air quality.
- Combine quantitative evaluations for some criteria with qualitative evaluations for others and use different criteria for different types of projects.
- Link planning to programming by awarding points to, or reserving eligibility for, projects that fulfill priorities from local plans or the regional plan.
- Focus CMAQ investment in urban centers or livable communities, either by awarding points to projects in certain places or by establishing set-asides for them.

# Details on other MPOs' ranking procedures

This review is not a complete census of CMAQ programs, but instead it highlights examples of programming at other MPOs for CMAP to consider.<sup>3</sup> To organize the review, staff examined the extent to which other MPOs considered benefits in the following areas: congestion relief, safety, reliability, accessibility, system preservation, and livability. The last area is multifaceted, but it is assumed here to include economic development and environmental protection. Criteria used

<sup>&</sup>lt;sup>3</sup> While many MPOs program CMAQ funds, not all have competitive processes for awarding funding. Of those with competitive programs, not all had their criteria available on their websites. In addition, some MPOs combine their programming processes for CMAQ and local Surface Transportation Program funds, while others operate a standalone CMAQ program. This review is confined to competitive programs with clearly stated selection criteria, including those with combined STP/CMAQ programs, and mostly focuses on larger MPOs that are peers for CMAP.

by MPOs to evaluate practical factors, such as project readiness, were also investigated under "programming criteria" below. Particular examples of criteria from other MPOs are hyperlinked in the text below.

## **Project Benefits**

## **Congestion Relief**

In line with an overarching purpose of the CMAQ program, criteria related to congestion mitigation are used by many MPOs and typically receive a significant emphasis. This takes various forms, including quantitative prediction of congestion relief, targeting projects to corridors with heavy congestion, and using a qualitative assessment of planning factors.

- In its evaluation of highway projects, the Metropolitan Council, the MPO for the Minneapolis-St. Paul region, reserves 350 points out of 1,100 possible for congestion mitigation. Out of this, 150 points are available based on whether the project benefits a currently congested roadway, as measured by the existing volume-to-capacity ratio. Its evaluation of transit expansion projects also considers whether the project benefits a congested roadway, although the weight is lower.
- The Delaware Valley Regional Planning Commission (DVRPC), the MPO for the Philadelphia region, combines VMT reduction with emissions reduction in its evaluation of CMAQ projects. A project must either reduce emissions by X or reduce VMT by Y to achieve a given number of points. The maximum number of points available in that area is 15 out of 100 total.
- Besides a quantitative estimate of the change in vehicle hours traveled, the Houston-Galveston Area Council (H-GAC), the MPO for the Houston region, also considers qualitative planning factors, including whether roadway projects relieve bottlenecks, fill gaps in the network, and include certain intelligent transportation systems (ITS) components. Houston also notes the "importance" of the highway facility, including NHS routes, major corridors, and intermodal connectors.

#### Safety

Several MPOs and DOTs evaluate the safety benefits of highway projects and, less frequently, bicycle/pedestrian projects.

- The Southwestern Pennsylvania Commission, the MPO for the Pittsburgh region, reserves up to 21 points out of 237 total possible for safety improvements. The Southwestern Pennsylvania Commission uses a semi-quantitative scoring system in which evaluation categories are assigned weights, which are then multiplied against qualitative assessments of low (1 point), medium (2 points), and high (3 points) to determine the score.
- The Houston-Galveston Area Council incorporates safety and security measures into a number of its "planning factors", which are mode-specific criteria that, for transit and non-ITS roadway projects, account for 50% of a project's score (the benefit-cost analysis represents the remaining 50%). Safety and security measures account for 20 points of

- the 100 possible points for the roadway planning factors; specific criteria include evacuation routes and high crash risk sites for highway projects.
- MPOs in North Carolina allocate a small number of points, equivalent to 2% of the score, to projects that improve bicycle and pedestrian safety. Likewise, H-GAC asks project sponsors for narrative information about how a project would reduce collisions with bicycles and awards 10 points out of 100 to that category.

Although it has not been seen in a CMAQ evaluation, safety can also be evaluated for transit projects. For example, the Federal Transit Administration New Starts/Small Starts program scoring criteria evaluate crash reduction benefits from transit investments as a function of the decrease in automobile use.

### Reliability

Travel time reliability has come to be seen as an important aspect of system performance, both for highway and transit users. Most congestion analyses focus on average conditions in peak periods rather than conditions on "bad days." Methods of predicting reliability benefits are still under development, and reliability has not been integrated into CMAQ/STP project selection methodologies to the extent that other criteria have been. However, some examples are as follows:

- As part of its modal planning factors, the Houston-Galveston Area Council has specific
  criteria for ITS/operations projects, which have a major impact on reliability. These
  criteria include qualitative evaluations of system redundancy, system migration and
  expandability, integration and information sharing, incident and event management,
  and system lifecycle and maintenance issues.
- The Cincinnati MPO awards points to freight projects if they can show a potential improvement in improvement to on-time deliveries. The application requests documentation of the existing on-time delivery problem and an explanation of how the project will improve the reliability of freight arrivals and/or departures.
- Two MPOs in Virginia (Hampton Roads Transportation Planning Organization and Richmond Area Metropolitan Planning Organization) include the potential for improvement in transit system reliability in their project ranking criteria. In both Hampton Roads and Richmond, the reliability measure accounts for up to 25 points out of 100 total possible for non-expansion, non-rolling stock projects and is scored qualitatively.

# Accessibility and Connectivity

Transportation accessibility typically refers to the ability to reach destinations within a certain time, while connectivity indicates the ease with which a traveler can physically get between two places or two modes. Where it is included in CMAQ evaluations, these are typically assessed qualitatively.

- The Southwest Washington Regional Transportation Commission, the MPO for Vancouver, Washington, includes access management, providing up to 6 points of the 110 total possible points for criteria such as non-traversable medians, reduced access points, and elimination of at-grade crossings.
- The Houston-Galveston Area Council's planning factors for bicycle and pedestrian projects reserve 45 points out of 100 possible for connectivity measures, including barrier elimination, land use connections, pedestrian and bicycle facility connections, and transit connections. Similarly, H-GAC's planning factors for "Livable Centers Initiative" projects also provide 45 points out of 100 total for connectivity.

### System Preservation and Operations

Although it is less common, some MPOs do take system preservation and operations into account when developing their CMAQ programs. The CMAQ program is not intended to fund routine maintenance, and so this consideration generally takes note of existing geometric deficiencies, long-term maintenance costs, or the existence of a maintenance plan for a project.

- The Southwest Washington Regional Transportation Commission includes existing geometric conditions such as pavement and shoulder width for a maximum of 6 points out of the 110 total points.
- Anchorage Metro Area Transportation Solutions, the MPO for Anchorage, Alaska, notes
  the operations and maintenance costs associated with project, and awards more points
  for projects with lower operations and maintenance costs.
- In its evaluation of highway ITS projects, the Houston-Galveston Area Council provides
  points for the existence of a formal maintenance plan. Further, H-GAC provides for up
  to 15 points in the transit capital planning factors for documentation on a project's
  maintenance plan.

#### Livability

Livability has many aspects and can be defined in many ways. CMAP staff is currently working on a research project in FY 2014 to investigate livability performance metrics for the transportation system. Here livability is interpreted to include environmental protection and economic development. Land use objectives are often considered part of livability; these are discussed below under "Linking Planning to Programming."

#### **Economic Development**

MPOs frequently evaluate the economic benefits of CMAQ-funded projects. Typically the evaluation is judgment-based, with points given for how well a project would support employment growth or real estate development.

• The Southwestern Pennsylvania Commission reserves up to 15 points out of 237 total possible points for "sustainable development benefits." The Commission allocates a weight of 5 to that category, and then multiplies that weight by qualitative scores of "high" (3 points), "medium" (2 points), or "low" (1 point) to determine total points in that category.

- The Indianapolis MPO provides a small number of points (2 out of 100) for projects expected to create or retain jobs in "core communities," which it defines as an area where an special economic development district is already in place (a tax increment finance district, airport development district, empowerment zone, etc.).
- The Southwest Washington Regional Transportation Commission reserves a maximum of 25 points out of 110 total points for economic development criteria, including employment growth, providing or improving access to employers, providing or improving access to freight generators, and the leveraging of private partner funds.

The review did not find a CMAQ program that uses economic impact software to compare the economic impacts of candidate projects. However, NCDOT evaluates the economic impact of each project in its state highway program using commercial modeling software; some of the projects in NCDOT's annual highway program are smaller in cost and scope than typical CMAQ-funded highway projects in the Chicago region.<sup>4</sup> This example may be worth more investigation.

#### **Environmental Protection**

As one the CMAQ program's primary objectives, air quality improvements are considered in the evaluation criteria for all MPOs with competitive programs that we reviewed. Occasionally MPOs go beyond air quality to consider other environmental benefits or impacts.

- The Southwest Washington Regional Transportation Commission encourages best practices by providing a maximum of 10 points of 110 possible for the use of various sustainable features, including LED lighting, reuse of pavement and materials, and lowimpact development to reduce stormwater runoff.
- The Cincinnati MPO has a goal to "Protect and Enhance the Environment" as part of its combined CMAQ/STP program. Among other things, projects are ranked by whether they reduce transportation's impact on water quality and noise levels.

#### **Other Livability Criteria**

A number of other livability criteria have been considered by MPOs. The Anchorage MPO, Metropolitan Council, and Delaware Valley Regional Planning Commission all include measures of environmental justice in their evaluations of CMAQ projects. The Houston MPO's planning factors for transit and Livable Centers Initiative projects include measures of access to underserved populations and design quality.

# **Linking Planning to Programming**

Many MPOs include some measure of a project's consistency with local or regional plans as an evaluation criterion for the CMAQ program. Generally they either interpret plan consistency as

<sup>&</sup>lt;sup>4</sup> See https://connect.ncdot.gov/projects/planning/Pages/StrategicPrioritization.aspx, Prioritization 2.0 Final Scores and Data

an eligibility requirement or include it as an evaluation criterion. Examples are highlighted in the following paragraphs.

- Delaware Valley Regional Planning Commission asks applicants to identify which goals from the regional long-range plan or local comprehensive plan that their projects implement. It also requires CMAQ projects to be located within congested sub-corridors identified through the agency's Congestion Management Process (CMP).
- The Denver Region Council of Governments (DRCOG) has a process for establishing
   Designated Urban Centers to help implement its Metro Vision 2035 plan. Projects within
   these centers may receive additional points on CMAQ applications worth 5% of the total
   score.
- Puget Sound Regional Council uses its point system to guide both CMAQ and STP funding to Designated Regional Growth Centers from its VISION 2040 and the Regional Economic Strategy, including supporting manufacturing and industrial centers. The assessment is mostly qualitative and judgment-based, with examples given of projects that score in the low, medium, or high categories rather than firm rules for assigning points.
- The Indianapolis MPO awards a small number of points for best practices in the comprehensive plan in the municipality where the project is located. For instance, half a point is awarded for each plan component, such as supporting mixed-use and higher density development, encouraging new growth in existing centers, designing pedestrian-friendly communities, etc.
- In its evaluation of transit expansion projects for "Development Framework Implementation," the Metropolitan Council awards up to 100 points (out of 1,600) for projects that support planned 2030 land uses, population, and employment in the project corridor. The Metropolitan Council also uses CMAQ funding to reward achievement of non-transportation regional planning goals, in that it allows up to 100 points for a community's progress made toward affordable housing goals.
- Portland Metro, the MPO for the Portland, OR, region, combines its STP and CMAQ programs into a regional flexible funding program. The current policy framework directs these blended funds to the following three purposes: (1) regional programs for a variety of purposes, including transit-oriented development and transportation system management; (2) community investment funds for active transportation, complete streets, and green economy/freight initiatives; and (3) a regional economic opportunity fund targeted to small-scale projects.

# **Programming Criteria**

A number of other relevant factors, in addition to their benefits, may come into play in prioritizing projects. Several MPOs prioritize projects that provide more than the standard 20% local match for a project, along with projects that have completed preparation work and are ready for construction. Additionally, some MPOs emphasize the use of CMAQ funds as gap

financing – that is, selecting projects that would not be built but for CMAQ funds. Several cases are highlighted in the following paragraphs.

- Delaware Valley Regional Planning Commission sets aside 29 points out of the 100 possible for project readiness, sponsor capacity, and local contribution. Project readiness and sponsor capacity are evaluated qualitatively, with projects being assigned a "high", "medium", or "low" score.
  - To demonstrate project readiness, applicants are asked to develop a project timeline with implementation milestones and to complete a project readiness checklist.
  - To demonstrate sponsor capacity, applicants provide a narrative describing their past experience – particularly in projects using federal funds – as well as the relative roles of project partners and a demonstration that matching funds have been secured.
  - On the local contribution criterion, projects that provide a larger local match receive more points, helping to leverage greater levels of investment for the overall CMAQ program.
- The Cincinnati MPO docks a small number of points from applicants with a history of requesting cost increases of more than 25% or project phases that have not started in the year for which they were programmed.
- The Denver Region Council of Governments awards 15% of the available points to projects that are particularly innovative or unique, with the intent to help test the project concept.
- The Southwestern Pennsylvania Commission provides up to 15 points for projects grouped together in a corridor, up to 15 points for projects that bring non-traditional funding to TIP, and up to 15 points for increased non-federal funding share.

# Conclusion

While the requirement to improve air quality is common to all CMAQ programs, there is considerable variation in the other criteria MPOs use in programming this fund source. However, it is quite typical for MPOs to employ a point system by which to consider a variety of factors, qualitative and quantitative, together on the same scale. CMAP staff currently uses the cost-effectiveness of VOC removal as its criterion for ranking projects. Shifting to a multicriteria point system to evaluate projects should be considered for the CMAQ program at CMAP. Additional criteria have been used by the modal focus groups at CMAP to help evaluate projects; these or similar criteria could be converted to a point system for project evaluation. This has the potential to enhance the committee decision-making process with a systematic way to consider a wider range of project benefits as well as to further clarify the relationship between the CMAQ program and GO TO 2040.

**Action Requested: Discussion**